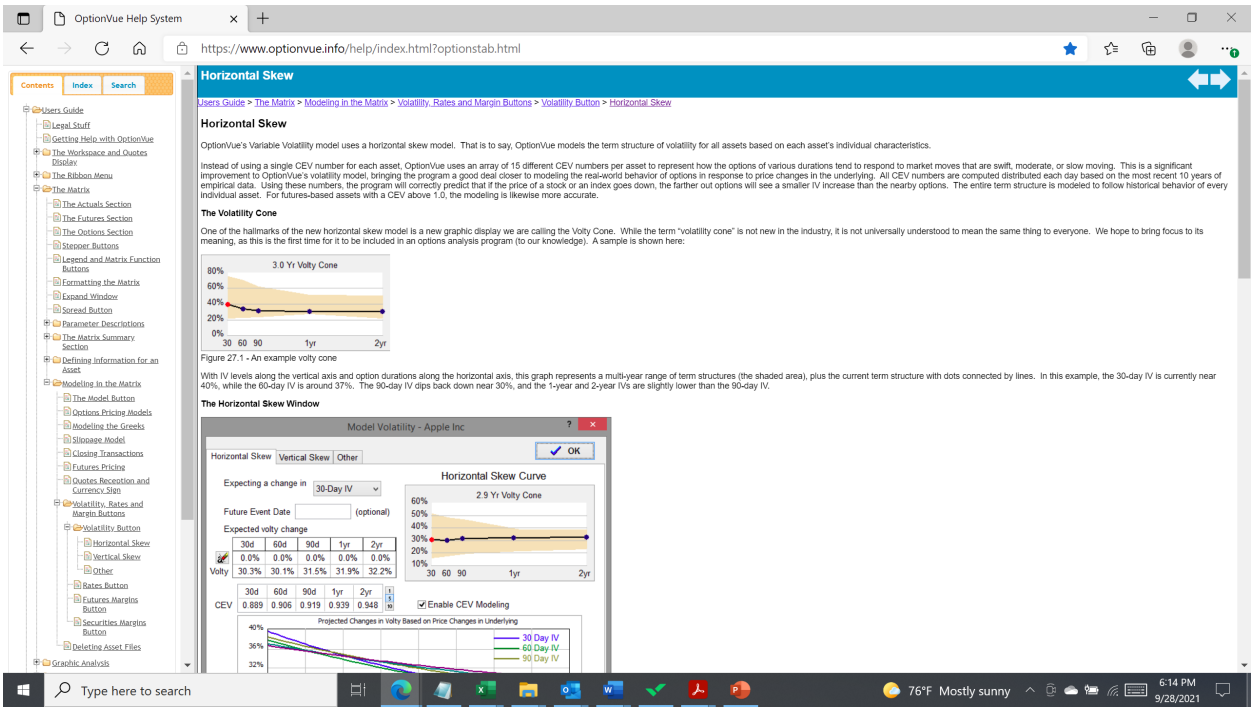
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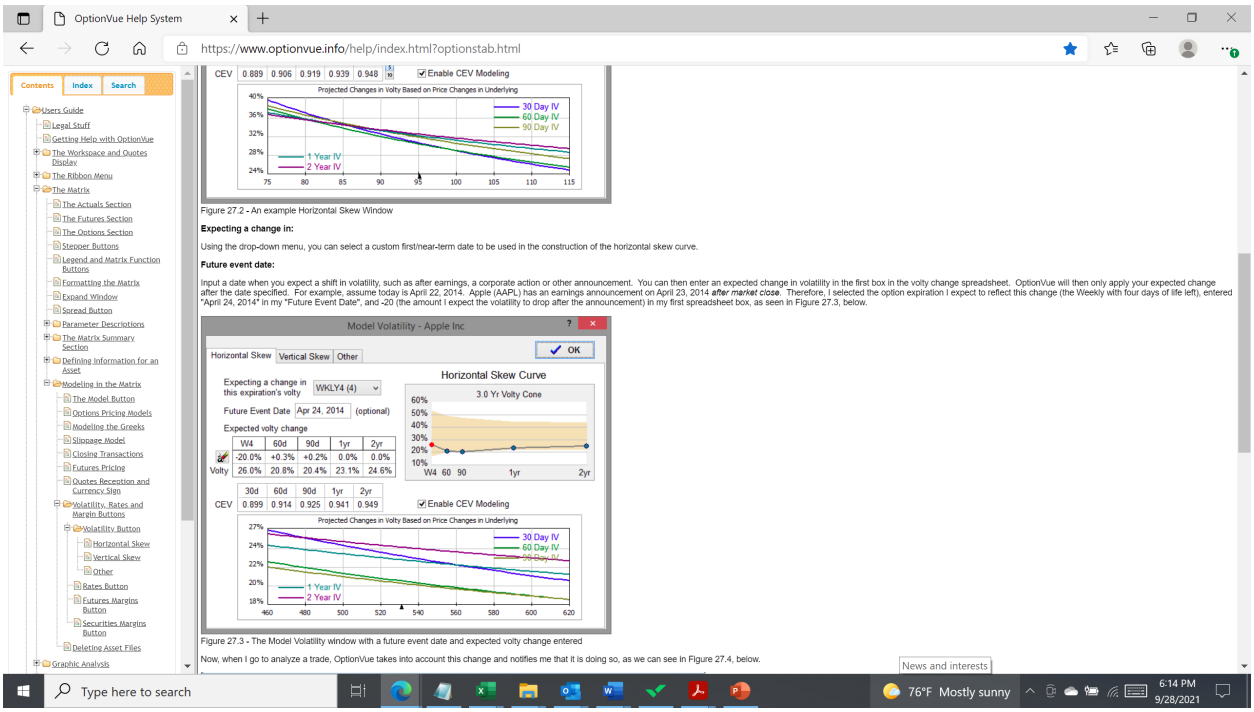
Horizontal Skew
Users Guide > The Matrix > Modeling in the Matrix > Volatility, Rates and Margin Buttons > Volatility Button > Horizontal Skew
Horizontal Skew
OptionVue's Variable Volatility model uses a horizontal skew model. That is to say, OptionVue models the term structure of volatility for all assets based on each asset's individual characteristics.
Instead of using a single CEV number for each asset, OptionVue uses an array of 15 different CEV numbers per asset to represent how the options of various durations tend to respond to market moves that are swift, moderate, or slow moving. This is a significant improvement to OptionVue's volatility model, bringing the program a good deal closer to modeling the real-world behavior of options in response to price changes in the underlying. All CEV numbers are computed distributed each day based on the most recent 10 years of empirical data. Using these numbers, the program will correctly predict that if the price of a stock or an index goes down, the farther out options will see a smaller IV increase than the nearby options. The entire term structure is modeled to follow historical behavior of every individual asset. For futures-based assets with a CEV above 1.0, the modeling is likewise more accurate.
The Volatility Cone
One of the hallmarks of the new horizontal skew model is a new graphic display we are calling the Volty Cone. While the term "volatility cone" is not new in the industry, it is not universally understood to mean the same thing to everyone. We hope to bring focus to its meaning, as this is the first time for it to be included in an options analysis program (to our knowledge). A sample is shown here:
3.0 Yr Volty Cone
Figure 27.1 - An example volty cone
With IV levels along the vertical axis and option durations along the horizontal axis, this graph represents a multi-year range of term structures (the shaded area), plus the current term structure with dots connected by lines. In this example, the 30-day IV is currently near 40%, while the 60-day IV is around 37%. The 90-day IV dips back down near 30%, and the 1-year and 2-year IVs are slightly lower than the 90-day IV.
The Horizontal Skew Window
Model Volatility - Apple Inc
Horizontal Skew
Vertical Skew
Other
OK
Expecting a change in
30-Day IV
Future Event Date
(optional)
Expected volty change
Horizontal Skew Curve
2.9 Yr Volty Cone
Volty
CEV
Enable CEV Modeling
Projected Changes in Volty Based on Price Changes in Underlying
30 Day IV
60 Day IV
90 Day IV
Type here to search
76°F Mostly sunny
6:14 PM
9/28/2021


OptionVue Help System
https://www.optionvue.info/help/index.html?optionstab.html
CEV
Enable CEV Modeling
Projected Changes in Volty Based on Price Changes in Underlying
30 Day IV
60 Day IV
90 Day IV
1 Year IV
2 Year IV
Figure 27.2 - An example Horizontal Skew Window
Expecting a change in:
Using the drop-down menu, you can select a custom first/near-term date to be used in the construction of the horizontal skew curve.
Future event date:
Input a date when you expect a shift in volatility, such as after earnings, a corporate action or other announcement. You can then enter an expected change in volatility in the first box in the volty change spreadsheet. OptionVue will then only apply your expected change after the date specified. For example, assume today is April 22, 2014. Apple (AAPL) has an earnings announcement on April 23, 2014 after market close. Therefore, I selected the option expiration I expect to reflect this change (the Weekly with four days of life left), entered "April 24, 2014" in my "Future Event Date", and -20 (the amount I expect the volatility to drop after the announcement) in my first spreadsheet box, as seen in Figure 27.3, below.
Model Volatility - Apple Inc
Horizontal Skew
Vertical Skew
Other
OK
Expecting a change in this expiration's volty
WKLY4 (4)
Future Event Date
Apr 24, 2014
(optional)
Expected volty change
Horizontal Skew Curve
3.0 Yr Volty Cone
Volty
CEV
Enable CEV Modeling
Projected Changes in Volty Based on Price Changes in Underlying
30 Day IV
60 Day IV
90 Day IV
1 Year IV
2 Year IV
Figure 27.3 - The Model Volatility window with a future event date and expected volty change entered
Now, when I go to analyze a trade, OptionVue takes into account this change and notifies me that it is doing so, as we can see in Figure 27.4, below.
News and interests
Type here to search
76°F Mostly sunny
6:14 PM
9/28/2021

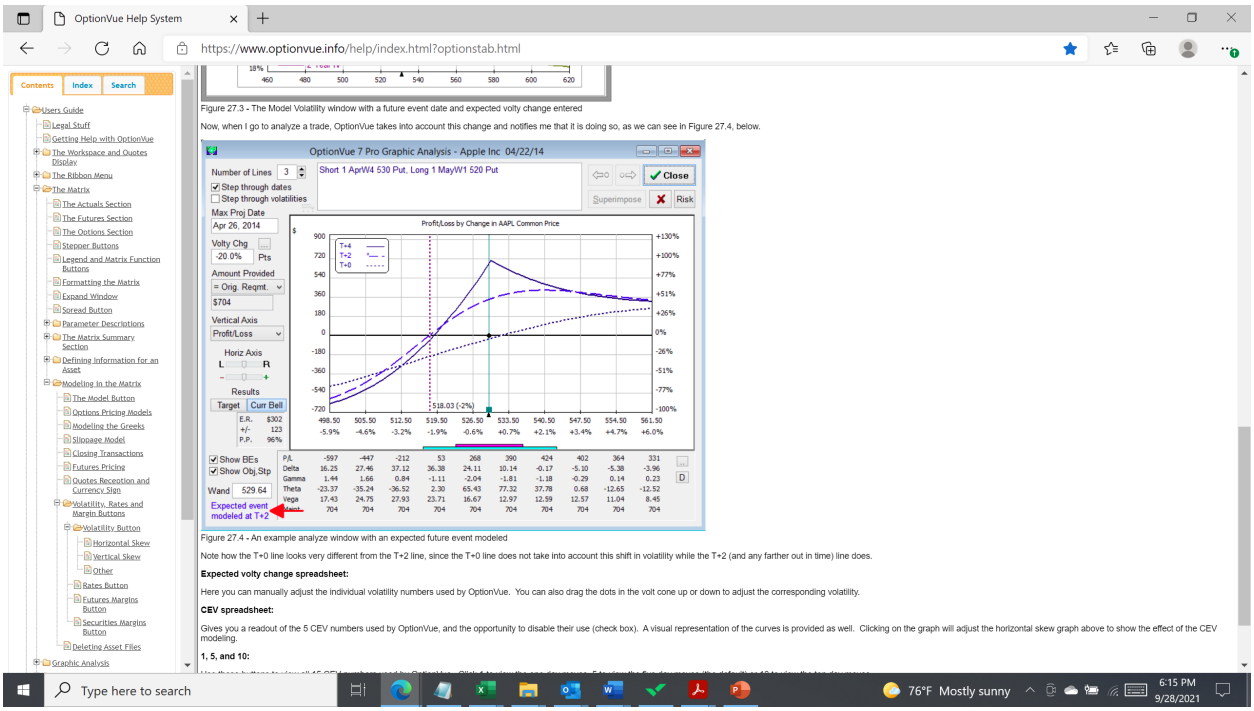


Figure 27.3 - The Model Volatility window with a future event date and expected volty change entered

Now, when I go to analyze a trade, OptionVue takes into account this change and notifies me that it is doing so, as we can see in Figure 27.4, below.

Figure 27.4 - An example analyze window with an expected future event modeled

Note how the T+0 line looks very different from the T+2 line, since the T+0 line does not take into account this shift in volatility while the T+2 (and any farther out in time) line does.

Expected volty change spreadsheet:

Here you can manually adjust the individual volatility numbers used by OptionVue. You can also drag the dots in the volt cone up or down to adjust the corresponding volatility.

CEV spreadsheet:

Gives you a readout of the 5 CEV numbers used by OptionVue, and the opportunity to disable their use (check box). A visual representation of the curves is provided as well. Clicking on the graph will adjust the horizontal skew graph above to show the effect of the CEV modeling.

1, 5, and 10:

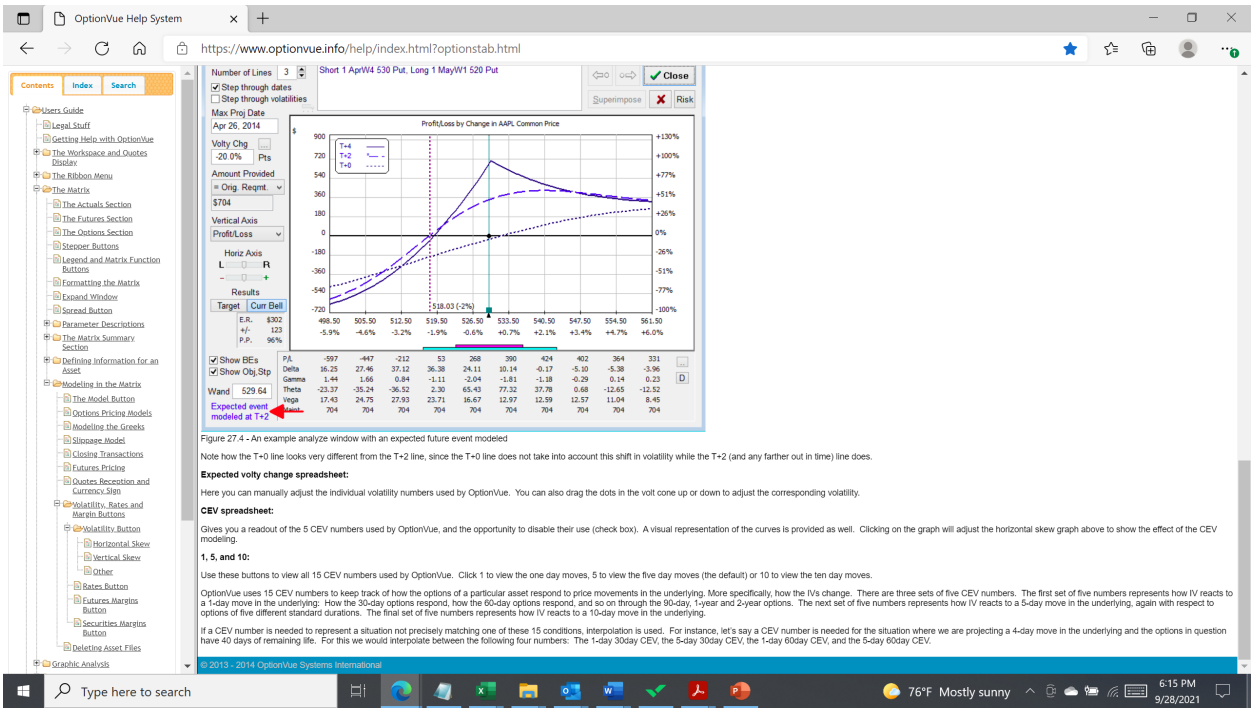


Figure 27.4 - An example analyze window with an expected future event modeled

Note how the T+0 line looks very different from the T+2 line, since the T+0 line does not take into account this shift in volatility while the T+2 (and any farther out in time) line does.

Expected volty change spreadsheet:

Here you can manually adjust the individual volatility numbers used by OptionVue. You can also drag the dots in the volt cone up or down to adjust the corresponding volatility.

CEV spreadsheet:

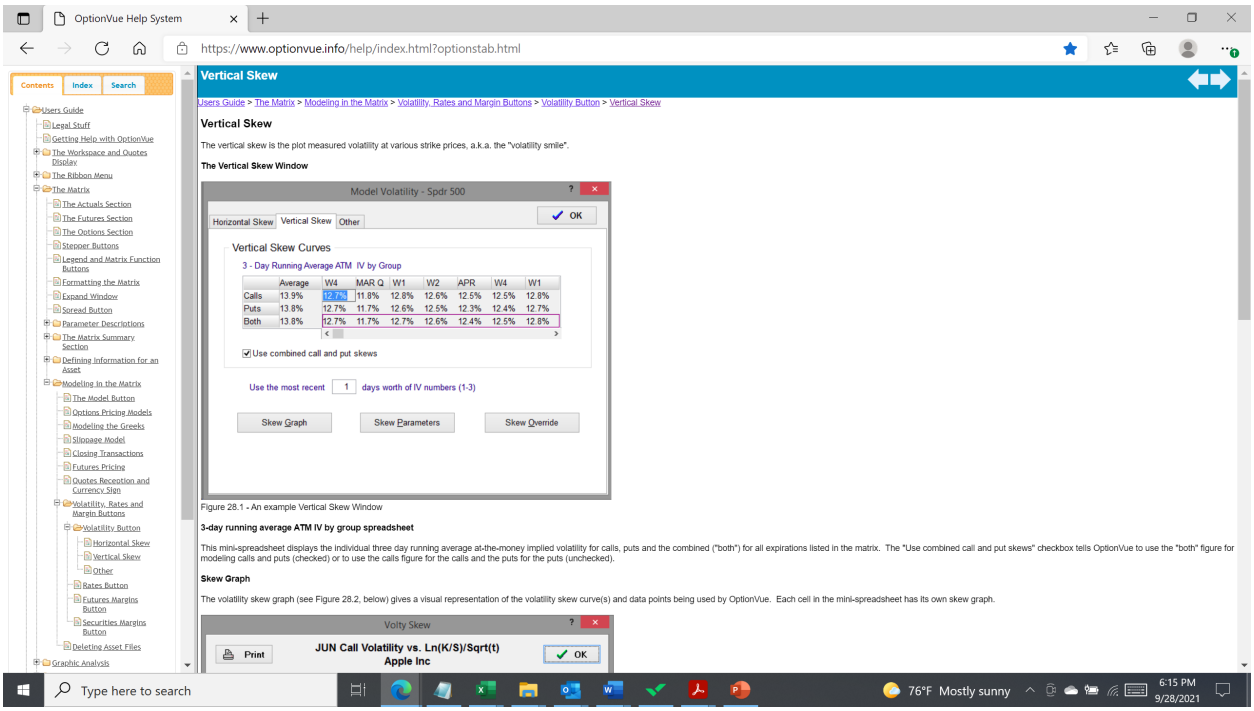
Gives you a readout of the 5 CEV numbers used by OptionVue, and the opportunity to disable their use (check box). A visual representation of the curves is provided as well. Clicking on the graph will adjust the horizontal skew graph above to show the effect of the CEV modeling.

1, 5, and 10:

Use these buttons to view all 15 CEV numbers used by OptionVue. Click 1 to view the one day moves, 5 to view the five day moves (the default) or 10 to view the ten day moves.

OptionVue uses 15 CEV numbers to keep track of how the options of a particular asset respond to price movements in the underlying. More specifically, how the IVs change. There are three sets of five CEV numbers. The first set of five numbers represents how IV reacts to a 1-day move in the underlying: How the 30-day options respond, how the 60-day options respond, and so on through the 90-day, 1-year and 2-year options. The next set of five numbers represents how IV reacts to a 5-day move in the underlying, again with respect to options of five different standard durations. The final set of five numbers represents how IV reacts to a 10-day move in the underlying.

If a CEV number is needed to represent a situation not precisely matching one of these 15 conditions, interpolation is used. For instance, let's say a CEV number is needed for the situation where we are projecting a 4-day move in the underlying and the options in question have 40 days of remaining life. For this we would interpolate between the following four numbers: The 1-day 30day CEV, the 5-day 30day CEV, the 1-day 60day CEV, and the 5-day 60day CEV.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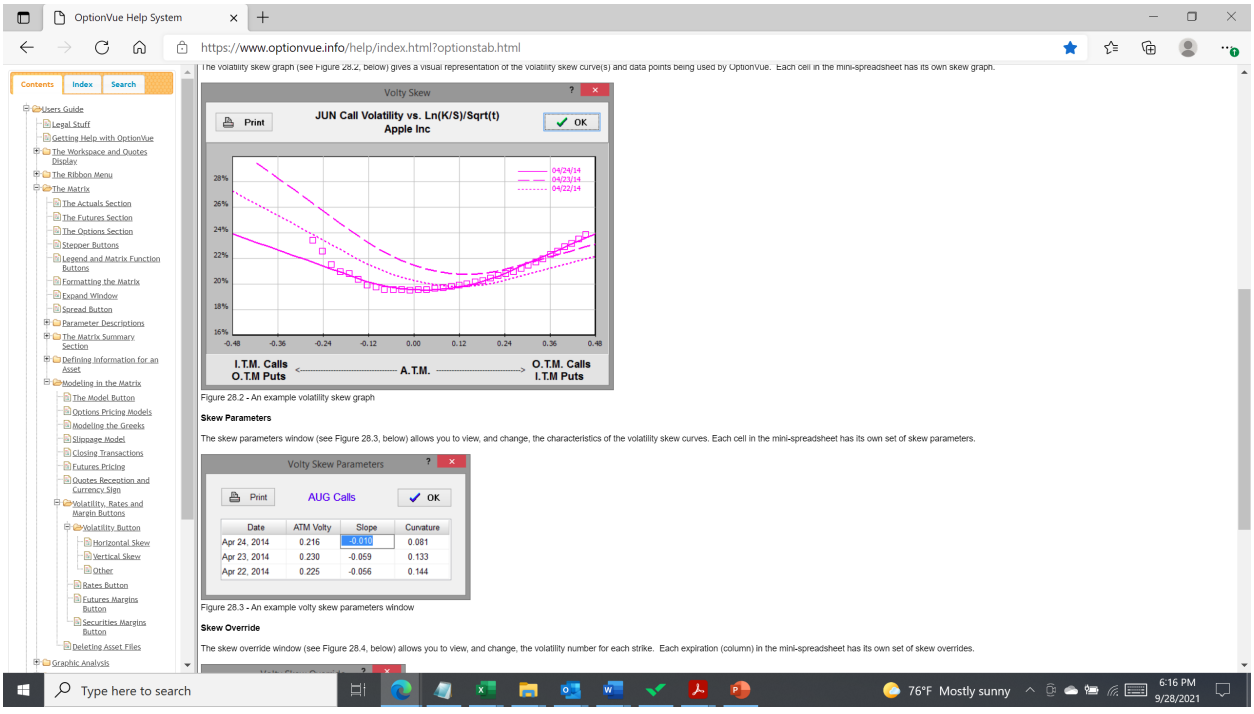
Vertical Skew
Users Guide > The Matrix > Modeling in the Matrix > Volatility, Rates and Margin Buttons > Volatility Button > Vertical Skew
Vertical Skew
The vertical skew is the plot measured volatility at various strike prices, a.k.a. the "volatility smile".
The Vertical Skew Window
Model Volatility - Spdr 500
Horizontal Skew
Vertical Skew
Other
OK
Vertical Skew Curves
3 - Day Running Average ATM IV by Group
Average W4 MAR Q W1 W2 APR W4 W1
Calls 13.9% 12.7% 11.8% 12.8% 12.6% 12.5% 12.5% 12.8%
Puts 13.8% 12.7% 11.7% 12.6% 12.5% 12.3% 12.4% 12.7%
Both 13.8% 12.7% 11.7% 12.7% 12.6% 12.4% 12.5% 12.8%
Use combined call and put skews
Use the most recent 1 days worth of IV numbers (1-3)
Skew Graph
Skew Parameters
Skew Override
Figure 28.1 - An example Vertical Skew Window
3-day running average ATM IV by group spreadsheet
This mini-spreadsheet displays the individual three day running average at-the-money implied volatility for calls, puts and the combined ("both") for all expirations listed in the matrix. The "Use combined call and put skews" checkbox tells OptionVue to use the "both" figure for modeling calls and puts (checked) or to use the calls figure for the calls and the puts for the puts (unchecked).
Skew Graph
The volatility skew graph (see Figure 28.2, below) gives a visual representation of the volatility skew curve(s) and data points being used by OptionVue. Each cell in the mini-spreadsheet has its own skew graph.
Volty Skew
Print
JUN Call Volatility vs. Ln(K/S)/Sqrt(t)
Apple Inc
OK
Type here to search
76°F Mostly sunny
6:15 PM
9/28/2021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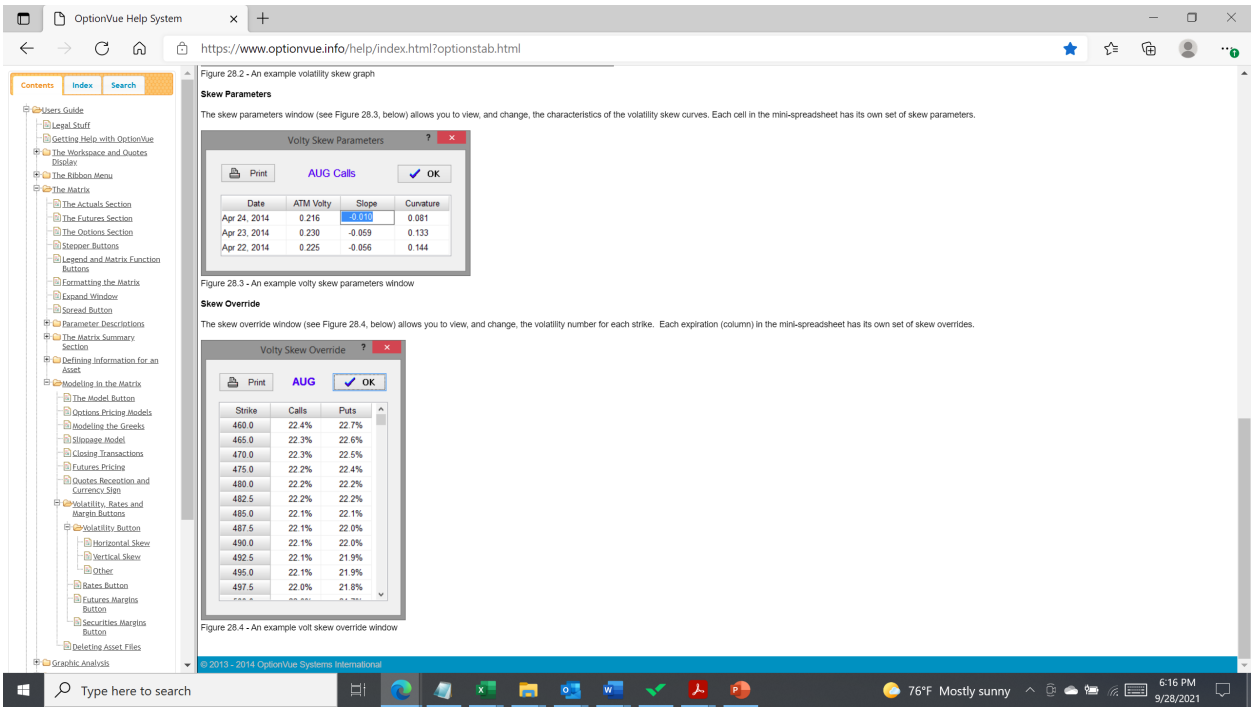
https://www.optionvue.info/help/index.html?optionstab.html
The volatility skew graph (see Figure 28.2, below) gives a visual representation of the volatility skew curve(s) and data points being used by OptionVue. Each cell in the mini-spreadsheet has its own skew graph.
Volty Skew
Print
JUN Call Volatility vs. Ln(K/S)/Sqrt(t)
Apple Inc
OK
04/24/14
04/23/14
04/22/14
I.T.M. Calls
O.T.M Puts
A.T.M.
O.T.M. Calls
I.T.M Puts
Figure 28.2 - An example volatility skew graph
Skew Parameters
The skew parameters window (see Figure 28.3, below) allows you to view, and change, the characteristics of the volatility skew curves. Each cell in the mini-spreadsheet has its own set of skew parameters.
Volty Skew Parameters
Print
AUG Calls
OK
Date ATM Volty Slope Curvature
Apr 24, 2014 0.216 -0.010 0.081
Apr 23, 2014 0.230 -0.059 0.133
Apr 22, 2014 0.225 -0.056 0.144
Figure 28.3 - An example volty skew parameters window
Skew Override
The skew override window (see Figure 28.4, below) allows you to view, and change, the volatility number for each strike. Each expiration (column) in the mini-spreadsheet has its own set of skew overrides.
Type here to search
76°F Mostly sunny
6:16 PM
9/28/2021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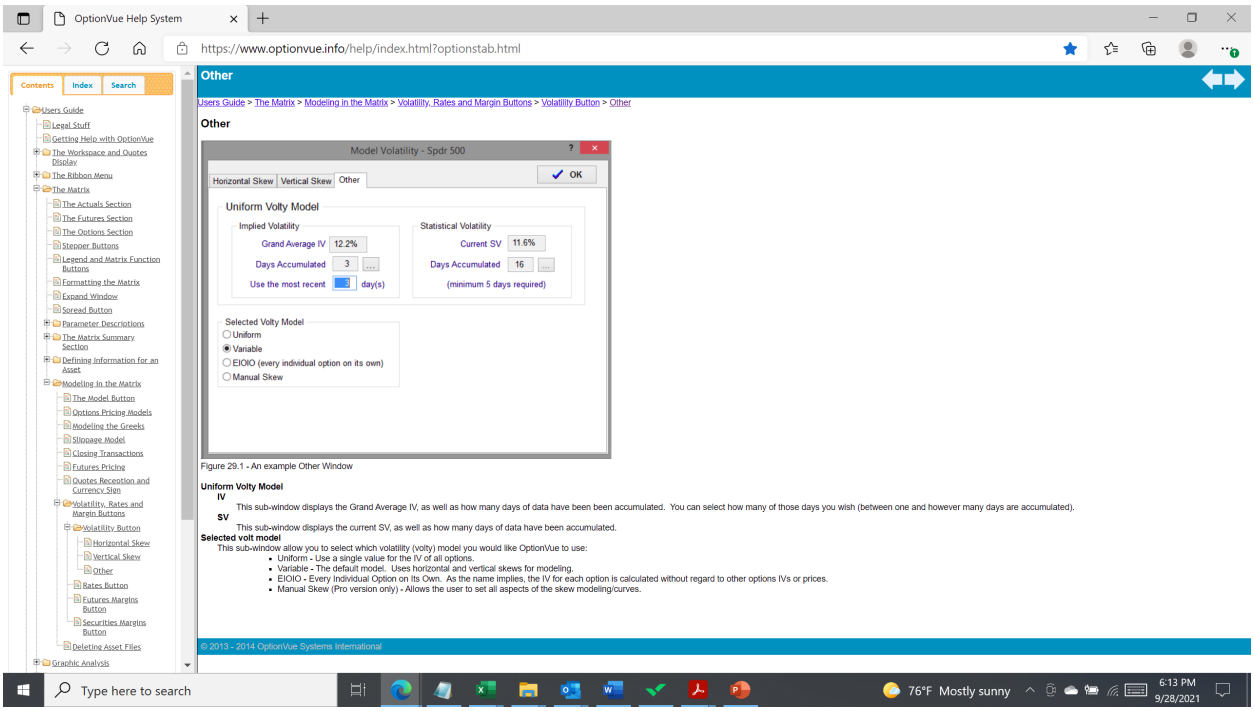
Modeling the Greeks
Slippage Model
Closing Transactions
Futures Pricing
Quotes Reception and Currency Sign
Volatility, Rates and Margin Buttons
Volatility Button
Horizontal Skew
Vertical Skew
Other
Rates Button
Futures Margins Button
Securities Margins Button
Deleting Asset Files
Graphic Analysis
Figure 28.2 - An example volatility skew graph
Skew Parameters
The skew parameters window (see Figure 28.3, below) allows you to view, and change, the characteristics of the volatility skew curves. Each cell in the mini-spreadsheet has its own set of skew parameters.
Volty Skew Parameters
Print
AUG Calls
OK
Date
ATM Volty
Slope
Curvature
Apr 24, 2014
0.216
-0.010
0.081
Apr 23, 2014
0.230
-0.059
0.133
Apr 22, 2014
0.225
-0.056
0.144
Figure 28.3 - An example volty skew parameters window
Skew Override
The skew override window (see Figure 28.4, below) allows you to view, and change, the volatility number for each strike. Each expiration (column) in the mini-spreadsheet has its own set of skew overrides.
Volty Skew Override
Print
AUG
OK
Strike
Calls
Puts
460.0
22.4%
22.7%
465.0
22.3%
22.6%
470.0
22.3%
22.5%
475.0
22.2%
22.4%
480.0
22.2%
22.2%
482.5
22.2%
22.2%
485.0
22.1%
22.1%
487.5
22.1%
22.0%
490.0
22.1%
22.0%
492.5
22.1%
21.9%
495.0
22.1%
21.9%
497.5
22.0%
21.8%
Figure 28.4 - An example volt skew override window
© 2013 - 2014 OptionVue Systems International
Type here to search
76°F Mostly sunny
6:16 PM
9/28/2021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The Matrix Summary Section
Defining Information for an Asset
Modeling in the Matrix
The Model Button
Options Pricing Models
Modeling the Greeks
Slippage Model
Closing Transactions
Futures Pricing
Quotes Reception and Currency Sign
Volatility, Rates and Margin Buttons
Volatility Button
Horizontal Skew
Vertical Skew
Other
Rates Button
Futures Margins Button
Securities Margins Button
Deleting Asset Files
Graphic Analysis
Other
Users Guide > The Matrix > Modeling in the Matrix > Volatility, Rates and Margin Buttons > Volatility Button > Other
Other
Model Volatility - Spdr 500
OK
Horizontal Skew
Vertical Skew
Other
Uniform Volty Model
Implied Volatility
Grand Average IV
12.2%
Days Accumulated
3
Use the most recent
day(s)
Statistical Volatility
Current SV
11.6%
Days Accumulated
16
(minimum 5 days required)
Selected Volty Model
Uniform
Variable
EIOIO (every individual option on its own)
Manual Skew
Figure 29.1 - An example Other Window
Uniform Volty Model
IV
This sub-window displays the Grand Average IV, as well as how many days of data have been been accumulated. You can select how many of those days you wish (between one and however many days are accumulated).
SV
This sub-window displays the current SV, as well as how many days of data have been accumulated.
Selected volt model
This sub-window allow you to select which volatility (volty) model you would like OptionVue to use:
Uniform - Use a single value for the IV of all options.
Variable - The default model. Uses horizontal and vertical skews for modeling.
EIOIO - Every Individual Option on Its Own. As the name implies, the IV for each option is calculated without regard to other options IVs or prices.
Manual Skew (Pro version only) - Allows the user to set all aspects of the skew modeling/curves.
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Type here to search
76°F Mostly sunny
6:13 PM
9/28/2021